



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,358	04/22/2004	Hamilton Wong	70602-021	6062
31824	7590	05/17/2006	EXAMINER	
MCDERMOTT WILL & EMERY LLP 18191 VON KARMAN AVE. SUITE 500 IRVINE, CA 92612-7108			DINH, TIEN QUANG	
		ART UNIT	PAPER NUMBER	
			3644	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/829,358	WONG ET AL.	
	Examiner Tien Dinh	Art Unit 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-9, 11, 12, 14, 15 and 21-27 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 26 and 27 is/are allowed.  
 6) Claim(s) 1-9, 11, 12, 14, 15 and 22-25 is/are rejected.  
 7) Claim(s) 21 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                     | Paper No(s)/Mail Date. _____ .  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____ .                                  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 12, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischell in view of Simonian or Schulte.

Fischell discloses a spacecraft having a bus that carries instruments 16 that generate heat. Fischell also discloses an active cooler and thermal panels mounted to the spacecraft at a location spatially separated from the instrument. Fishchell is silent on the kinematic mount to kinematically isolate the instrument from the other parts of the spacecraft. However, Simonian or Schulte teaches that the use of kinematic mounts is well known in this day and age.

It would have been obvious to one of ordinary skill in the art to have used kinematic mounts in Fischell's system as taught by Simonian or Schulte to prevent unwanted vibrations.

Please note that the active cooler that includes elements 26, pipes 20, and panel 21 do not substantially transfer mechanical vibration to the instrument. See figure 2. The active cooler thermally coupled between the instrument and the radiator panels. Plus figures 3 and 6 show that the active coolers do not substantially transfer mechanical vibration to the instruments 42, 67. Please note that the active coolers are at a location that is spatially separated and mechanically isolated from the instrument.

Claims 2, 3, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischell as modified by Simonian or Schulte in view of the admitted prior art on page 8 (paragraph 26).

Fischell as modified by Simonian or Schulte discloses all claimed parts except for the active cooler being a cryocooler. However, the admitted prior art teaches cryocoolers having compressors and cold head assembly that includes cold finger are well known.

It would have been obvious to one skilled in the art at the time the invention was made to have used cryocoolers having compressors and cold head assembly that includes cold finger in Fischell's system as modified by Simonian or Schulte as taught by the admitted prior art for a more efficiently temperature control system. Please note that mounting the cryocoolers to the north thermal radiator panel is a step that one skilled in the art would have taken to accommodate the spacecraft for certain missions.

Re claims 9, 10, and 13, please note that the use of multiple active coolers for thermal capability, redundancy, and reliability are steps that one skilled in the art would have taken to improve the safe operation of the spacecraft.

Claims 4-8, 14, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischell as modified by Simonian or Schulte and the admitted prior art as applied to claims 1-3 above, and further in view of Feger.

Art Unit: 3644

Fischell as modified by Simonian or Schulte and the admitted prior art discloses all claimed parts except for the thermal link having braided copper. However, Feger discloses that thermal links made up of braided copper are well known in the art.

It would have been obvious to one skilled in the art at the time the invention was made to have used thermal links made out of braided copper in Fischell's system as modified by Simonian or Schulte and the admitted prior art and as taught by Feger to have a more efficiently temperature control system.

Re claim 8, please note that it is an obvious option for one skilled in the art to have a working fluid tube passing through an opening in an earth platform of the spacecraft for access to the instrument portion to be cooled so that the spacecraft can efficiently control the internal temperature.

Please note that the use of a bank of multiple stage active coolers is obvious to one skilled in the art so that the spacecraft can be efficiently controlled.

Please note that the admitted prior art teaches that cryocoolers are well known. One skilled in the art would have used multiple stage cryocoolers and multiple links from the cryocoolers to efficiently control the temperature of the spacecraft.

Please note that the use of multiple coolers involved only routine steps that one skilled in the art would have taken to provide further cooling or for redundancy.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fischell as modified by Simonian or Schulte in view of Gelon et al.

Art Unit: 3644

Fischell as modified by Simonian or Schulte discloses all claimed parts except for the closed loop control system. However, Gelon et al teaches that a closed loop control system is well known.

It would have been obvious to one skilled in the art at the time the invention was made to have used a closed loop control system in Fischell's system as modified by Simonian or Schulte and as taught by Gelon et al to efficiently control the temperature of the spacecraft.

Claims 15 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischell as modified by Simonian or Schulte in view of Caplin.

Fischell as modified by Simonian or Schulte discloses all claimed parts except for the solar array. However, Caplin teaches that solar panels are well known.

It would have been obvious to one skilled in the art at the time the invention was made to have used solar panels in Fischell's system as modified by Simonian or Schulte and as taught by Caplin for generating power.

Please note that the active coolers would inherently eliminate a need to perform a yaw flip of the spacecraft required to prevent radiator sun exposure since the coolers reduced the heat generated in/on the spacecraft.

Please also note that the solar array wings is capable of minimizing the solar pressure torque, the frequent momentum-adjust maneuvers, and a need to carry a large amount of moment-adjust propellant.

*Allowable Subject Matter*

Art Unit: 3644

Claim 21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

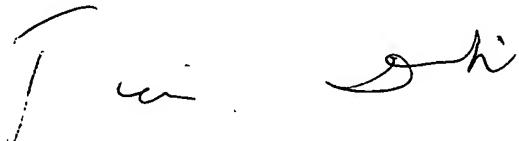
Claims 26 and 27 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tien Dinh whose telephone number is 571-272-6899. The examiner can normally be reached on 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 571-272-7045. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TD

A handwritten signature in black ink, appearing to read "Tien Dinh".